SITE MANAGEMENT PLAN

FOR

ROCKAWAY BOROUGH WELL FIELD SITE
OPERABLE UNIT #3
FOR PROPERTY OF
KLOCKNER & KLOCKNER
ROCKAWAY BOROUGH, NEW JERSEY

SUBMITTED TO:

USEPA - REGION II
EMERGENCY & REMEDIAL RESPONSE DIVISION
NEW YORK, NEW YORK

SUBMITTED BY:

THE WHITMAN COMPANIES, INC.
EAST BRUNSWICK, NEW JERSEY

ON BEHALF OF KLOCKNER & KLOCKNER

IN ACCORDANCE WITH:

ADMINISTRATIVE ORDER ON CONSENT
INDEX NO. II-CERCLA-95-0104

OCTOBER 1995

44 West Ferris Street, East Brunswick, New Jersey 08816

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OCTOBER 1995

Michael N. Metlitz
Project Manager

Ira L. Whitman, Ph.D., P.E.
Principal Consultant

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1.0 INTRODUCTION

This Site Management Plan (SMP) has been prepared for the Remedial Investigation/Feasibility Study (RI/FS) activities to be conducted by Klockner & Klockner at the Rockaway Borough Wellfield Site - Operable Unit #3 at Block 5, Lots 1 and 6, and Block 7, Lot 7, in the Borough of Rockaway (Klockner Property). This SMP has been prepared pursuant to Chapter VIII, Paragraph 28 of the Administrative Order on Consent (AOC) and Task I, Item C of the Statement of Work (SOW) entered into by Klockner & Klockner and the United States Environmental Protection Agency (EPA). This SMP has been prepared by The Whitman Companies, Inc., environmental consultants, on behalf of Klockner & Klockner.

2.0 SCOPE OF WORK

This SMP for the Rockaway Borough Wellfield Site - Operable Unit #3 for the Klockner Property describes the Site Management Team for Operable Unit #3 at the Klockner Property. The Operable Unit #3 work to be performed by Klockner is the RI/FS, which includes: Summary Report and RI/FS Work Plan Outline; RI/FS Work Plan and Schedule which includes a Field Operations Plan, consisting of a Sampling & Analysis Plan, Quality Assurance Project Plan and Health & Safety Plan; Characterization Report; Remedial Investigation Report; Feasibility Study Report; and associated activities as detailed in the Statement of Work.

3.0 PROJECT MANAGEMENT, ORGANIZATION AND STAFFING

A summary of the responsibilities and backgrounds of the key members of the project team is presented below. The project management structure is presented in Figure 3.1. Supplemental information will be submitted to EPA prior to the involvement of additional key personnel in the Remedial Investigation.

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Supervisory Professional Engineer - Ira L. Whitman, Ph.D., P.E.

Ira L. Whitman, Ph.D., P.E. of The Whitman Companies, Inc. will be the Supervisory Professional Engineer for this project. Dr. Whitman will provide general oversight of the project to insure that the objectives set forth in the AOC are met. He will provide managerial guidance to the technical group. All technical work will be performed under his direction and supervision. He will ensure that the work performed meets the requirements of all applicable Federal, State and local laws; he will also prepare and review reports, and attend project meetings.

Dr. Whitman founded The Whitman Companies, Inc. in 1985. He is a registered Professional Engineer in the State of New Jersey. He has supervised and managed a wide range of environmental investigations, including soil remediation and investigation. As the former Director of the State of Ohio EPA, he is experienced in the management of large scale project and program activities. He also serves as an expert witness in many cases involving site remediation and compliance with the New Jersey Industrial Site Recovery Act (ISRA) and National Oil and Hazardous Substances Pollution Contingency Plan (NCP) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Dr. Whitman is a Diplomate in The American Academy of Environmental Engineering and is certified in the field of Hazardous Waste Management.

Project Coordinator - Michael N. Metlitz

Michael N. Metlitz of The Whitman Companies, Inc. will act as Project Coordinator and will serve as Whitman's Project Manager. He will be responsible for the day-to-day management of all work to be performed pursuant to the AOC and SOW. He will be the primary contact for the EPA for all matters relating to work at the Klockner Property. He will prepare and review reports, assess data, maintain the project schedule, and provide supervision of field activities and the technical team.

Mr. Metlitz has been a Project Engineer and Manager at The Whitman Companies, Inc. since 1988. He has managed significant RI/FS projects involving trichloroethylene, tetrachloroethylene, and other forms of chlorinated hydrocarbon and volatile organic contamination. He is currently a project manager at a northern New Jersey site involving innovative methods of remediation and containment for dense non-aqueous phase liquid (DNAPL) contamination. Prior to 1988, Mr. Metlitz was a case manager in the New Jersey Department of Environmental Protection's (NJDEP) Environmental Cleanup Responsibility Act (ECRA) program for three years, supervising a wide array of complex site investigations.

Project Engineer - Karl Werner, P.E.

Karl Werner, P.E. of The Whitman Companies, Inc. will act as Project Engineer. He will perform remedial alternative screening and design, and assist in the preparation and review of reports.

Mr. Werner has over 20 years of professional experience in the execution and management of environmental and industrial projects. This experience includes the evaluation and implementation of remedial alternatives under CERCLA.

Project Geologist - Todd Gerber

Todd Gerber of The Whitman Companies, Inc. will act as Project Geologist. He will provide geologic and hydrogeologic characterization of the investigation data. He will assist in the coordination of field activities and the preparation of reports.

Mr. Gerber has been a hydrogeologist with The Whitman Companies, Inc. since 1987. He has managed and been involved in field activities associated with RI/FS projects involving solvents and chlorinated solvents.

Quality Assurance/Quality Control Officer - Richard Britton

Richard Britton of The Whitman Companies, Inc. will act as the Quality Assurance/Quality Control (QA/QC) Officer. He will overview and review field QA/QC, review laboratory QA/QC, conduct data validation and assist in the preparation of the Quality Assurance Project Plan.

Mr. Britton has been a geologist and project manager with The Whitman Companies, Inc. since 1989. During this time period he has been responsible for compliance with applicable QA/QC procedures. He has managed significant RI/FS projects involving chlorinated hydrocarbon and volatile organic contamination. Prior to 1989, he was employed at the NJDEP's Bureau of Environmental Measurements and Quality Assurance, where he was responsible for the oversight of field sampling QA/QC.

Health and Safety Officer - Michael Warner

Michael Warner of The Whitman Companies, Inc. will act as Health and Safety Officer. He will develop and implement the Health and Safety Plan for the Klockner Property.

Mr. Warner is responsible for The Whitman Companies, Inc. Health and Safety Program. He has experience in the preparation of Health and Safety Plans for sites contaminated with chlorinated organic solvents.

Field Support Staff

The following field support staff of The Whitman Companies, Inc. also will be involved in the RI/FS activities for the Klockner Property.

Renee Schneider	Conducting field sampling activities. Ms. Schneider has four years of experience in field sampling and investigation activities.
Paul Toscarelli	Conducting field sampling activities. Mr. Toscarelli is a non-degreed technician with experience in field sampling activities.
Lee Westcott	Conducting field sampling activities. Mr. Westcott is a non-degreed technician with experience in field sampling activities.

The Whitman Companies, Inc. Qualifications

The Whitman Companies, Inc. qualifications are included as Appendix 1. Curricula vitae for the project management team are included as Appendix 2.

Subcontractors

As the RI/FS process proceeds, it will be necessary to retain subcontractors for specific tasks. The following services likely will be required from subcontractors:

1. Drilling
2. Analytical Laboratory
3. Soil Gas Survey

Pursuant to Paragraph 51 of the AOC, Klockner will notify EPA in writing within three days of identifying the subcontractor proposed to perform the specific task(s). The name,

title, responsibilities and qualifications of the subcontractor will be provided to EPA pursuant to Task 1, Item C of the SOW. The subcontractor will not be permitted to conduct any work on the site until Whitman receives approval of the subcontractor from EPA.

The analytical laboratory which Whitman currently plans to retain to perform sample analysis for the RI/FS is Envirotech Research, Inc. of 777 New Durham Road, Edison, New Jersey. Envirotech is a New Jersey Certified laboratory (No. 12543) and routinely provides analytical support for CERCLA projects. Envirotech Research's corporate qualifications are included as Appendix 3. Key individuals at Envirotech Research include Quality Assurance Officer Mark Haulenbeek and Laboratory Director Michael Urban. Mr. Haulenbeek and Mr. Urban have been employed at Envirotech Research, Inc. for at least 9 years and were both previously employed by the EPA Region II for 10 years, as detailed in their curricula vitae (Appendix 5). An organizational chart for Envirotech Research, Inc. is included in Appendix 4. The key Analytical Method Supervisors, Custody Officer and System Manager are included in the organization chart. Curricula vitae for the key laboratory personnel are included in Appendix 5.

4.0 REFERENCES

1. Administrative Order on Consent, Index No. II-CERCLA-95-104, between Klockner & Klockner and United States Environmental Protection Agency, Effective October 7, 1995.

2. Statement of Work Remedial Investigation and Feasibility Study (Appendix A of Administrative Order on Consent between Klockner & Klockner and United States Environmental Protection Agency).

APPENDIX 1

THE WHITMAN COMPANIES, INC.
CORPORATE QUALIFICATIONS

THE WHITMAN COMPANIES, INC.

PROFESSIONAL QUALIFICATIONS IN

ENVIRONMENTAL ENGINEERING & MANAGEMENT

THE WHITMAN COMPANIES, INC.
EAST BRUNSWICK, NEW JERSEY

Tel: 908-390-5858
Fax: 908-390-9496

REGIONAL OFFICE
KING OF PRUSSIA, PENNSYLVANIA

Tel: 610-768-8989
Fax: 610-337-9548

44 West Ferris Street, East Brunswick, New Jersey 08816

900 East 8th Avenue, King of Prussia, Pennsylvania 19406

QUALIFICATIONS AND REFERENCES

CORPORATE BACKGROUND

The Whitman Companies, Inc. was founded in 1985 by its Principal, Dr. Ira L. Whitman, P.E. In 10 years the company has performed over 400 site assessment studies, remedial investigations and remediation designs of varying complexity and size, in more than 12 states. Industries served by the company include:

Petroleum Wholesale and Retail Distribution
Chemicals
Plastics
Flavors and Fragrances
Pigments
Primary Metals
Electronics
Consumer Products

In addition to industrial clients, much of the company's work has been for leading environmental law firms, major commercial realtors and developers, and financial institutions.

The Whitman Companies, Inc. has managed over 200 New Jersey Environmental Cleanup Responsibility Act (ECRA) cases from start to finish, including site cleanup and remediation activities. Many of these cases involved "at risk" sampling and cleanup designed to accelerate the process of fully complying with state regulations. Other projects designed by Whitman employ innovative investigation and remediation techniques.

The Whitman Companies, Inc. has completed many remedial investigation and remedial action projects at old urban industrial "Brownfields" sites that are being restored and recovered for future commercial use. The company excels at meshing the non-technical elements of site recovery with the highly technical aspects of environmental investigation and remediation.

Company headquarters are in East Brunswick, New Jersey, centrally located to all industries in New Jersey, and to all major transportation centers in the northeast. We are 40 minutes from Newark International Airport, and 15 minutes from the Amtrak Northeast corridor. The company operates a regional office in King of Prussia, Pennsylvania.

At present, The Whitman Companies employs 23 persons, 14 of whom are degreed professionals. The staff possesses a variety of undergraduate and graduate degrees, with concentration primarily in the areas of Environmental Engineering and Geology.

QUALIFICATIONS OF PRINCIPALS

The qualifications of our management and principal technical staff are as follows:

ENVIRONMENTAL ENGINEERING

1. **Dr. Ira L. Whitman,** P.E., Principal
   Ph.D., Environmental Engineering, The John Hopkins University
   Diplomate, American Academy of Environmental Engineers
   Registered Professional Engineer, NJ, NY, MD, OH, DE, PA

2. **Harry H. Elias,** P.E., Senior Project Manager
   B.S. Chemical Engineering, Drexel University

3. **Susan H. Eisenberg,** Project Manager
   M.Sc. Civil Engineering, Louisiana State University

4. **Barry I. Skoultchi,** E.I.T., Project Manager
   M.Sc. Chemical Engineering, Rutgers University

5. **Michael N. Metlitz,** E.I.T., Project Manager
   M.S. Environmental Engineering, N.J.I.T.

6. **Karl N. Werner,** P.E., Senior Engineer
   M.S. Chemical Engineering, Northeastern University

Dr. Whitman frequently lectures in environmental compliance before technical and business groups. From 1972 to 1975, he served in the cabinet of the Governor of Ohio as the first Director of the State of Ohio Environmental Protection Agency. He presently serves many industrial clients and attorneys as an expert in matters of litigation and regulation.

Mr. Elias joined The Whitman Companies, Inc. following eleven years as president of Professional Engineering Associates, Inc., an environmental engineering design firm. Mr. Elias heads up Whitman's design practice which includes waste treatment facilities for process industries, resource recovery and underground storage tank design and management.

Ms. Eisenberg has managed the investigation and remediation phases of significant ISRA/ECRA projects in her nine (9) years at The Whitman Companies, Inc. She presently manages the company's practice in the conduct of Phase I Environmental Site Assessments and Audits. Her clients include major financial institutions, attorneys, realtors and developers.

Mr. Skoultchi directs The Whitman Companies' programs in Remediation and Investigation. He manages projects involving large scale soil and ground water remediation, including bioremediation. Mr. Skoultchi supervises the company's conduct of a wide variety of sampling and site investigation projects, and its air pollution permitting programs.

Mr. Metlitz served as Chairman in 1992 for the New Jersey Section of the American Institute of Chemical Engineers. He spent 2½ years with the NJDEP Industrial Site Remediation Program Element where he was Case Manager on over 40 ECRA projects, several of which were multi-million dollar cleanup liability situations.

Mr. Werner has over 20 years professional experience related to the management of environmental and industrial projects. He is well versed in state of the art environmental, pollution prevention and remediation technologies having been employed at leading industrial, remediation and consulting engineering organizations.

HYDROGEOLOGY

1. **Richard D. Britton,** Project Manager
   B.S. Geology and Chemistry, Rutgers University
   M.S. Degree in Environmental Science, Rutgers University
   Professional Geologist, Tennessee

2. **Todd Gerber,** Project Hydrogeologist
   B.A. Geology, Rutgers University
   M.S. Degree in Environmental Science, Rutgers University
   Professional Geologist, Tennessee

3. **Renée Schneider,** Environmental Scientist
   B.A. Geology, California University of Pennsylvania
   M.S. (In Progress) Environmental and Occupational Health,
   University of Pittsburgh

Mr. Britton manages major ground water and site investigation and remediation projects for The Whitman Companies. His experience includes ISRA and UST projects from inception, involving preparation of closure plans, ground water investigation and remediation.

Mr. Gerber has extensive experience in supervising well drilling and installation activities, and a full range of hydrogeological investigations. He is manager of a major ground water remediation project involving DNAPL removal from the Brunswick bedrock formation, treatment by air stripping and carbon adsorption, and re-injection.

Ms. Schneider conducts environmental risk assessments associated with site investigation and remedial action development projects. She supervises field oriented geological investigations, wetlands permit investigations, and performs a wide variety of Phase I environmental assessments.

ENVIRONMENTAL AUDIT AND SITE ASSESSMENT STUDIES

The following clients have been served since the founding of The Whitman Companies, Inc.

Petroleum
Consumer's Oil, Trenton, NJ, Morrisville, PA and Levittown, NJ
McAllister Fuels, Atlantic City, NJ
Whale Oil Co., Greenwich, CT

Industrial
American Optical, Greenwich, CT
Cincinnati Milacron, Cincinnati, OH
Container Corporation of America, Clayton, MO
EG&G, Princeton, NJ
Textron Inc., Providence, RI

Development, Construction and Real Estate
Aegis Property Group, Ltd., Philadelphia, PA
K. Hovnanian Company, Red Bank, NJ
John A. Robbins Companies, Bala Cynwyd, PA

Financial
Chemical Bank, New York, NY
Midlantic Bank, Woodbridge, NJ
National Westminster Bank, New York, NY
Westwood Financial Corp., Los Angeles, CA

Miscellaneous
Adirondack Trailways, Kingston, NY
Bloomberg L.P., New York, NY
DHL Airways, Redwood City, CA

ENVIRONMENTAL AUDITING

The Whitman Companies, Inc. is frequently called upon to perform Phase I environmental site assessments including site inspections, regulatory file reviews and evaluation of site history. Phase II audits include a full set of field sampling procedures for soils, surface waters, ground water, and building interiors.

Susan H. Eisenberg directs the company's environmental auditing and site assessment program. Audits have been performed on properties as small as a vacant home site, and as large as a multi-site property holding consisting of 6 million square feet of industrial, warehouse and office space. The Whitman Companies, Inc. conforms to the Standard Practices for Transaction Screening and Phase I Environmental Site Assessment Process published in May 1993 by The American Society for Testing and Materials (ASTM).

SITE REMEDIATION AND ASSESSMENT

The Whitman Companies, Inc., has the professional staff and demonstrated remediation experience to perform site assessments; risk assessments; feasibility, treatability and pilot studies; and implement cost effective innovative remediation solutions that best meet the client's needs and regulatory requirements. Whitman project teams are multi-disciplined to assure successful implementation of the remedial solution involving the client in every task through to closure.

The following cases are representative of the over 200 industrial assessment and remediation projects managed by The Whitman Companies, Inc.

Client Type	Date	Responsibility
Flavors and Fragrances	1987-Present	Historical contamination at site dating back over seven (7) decades of chemical use. Ground water and soil are being treated by on-site bioremediation methods for volatile organic compounds.
Steel Products	1985-Present	45 acre site, bankrupt company. Soil cleanup involving metals and hydrocarbons has been completed. Currently in ground water cleanup phase involving extensive treatment system for removal and treatment of DNAPL contamination.
Chemical Company	1986-1991	"At risk" cleanup involving difficult tank farm dismantling and reconstruction. Contaminated ground water monitored but not required to undergo active remediation.
Personal Care Products	1988-Present	Soil contamination and tank removal remediated "at risk." DNAPL removal ongoing - largest in New Jersey, involving source removal and encapsulation.
Packaging Materials	1992-1994	Large Delaware site involving landfilling of wastes. After extensive testing and geophysical surveys, site to be capped and closed under state supervision.
Finished Metal Products	1990-Present	Sediments and soils associated with an on-site pond and wetlands area were contaminated with metals and solvents. Core samples were taken into pond sediments to determine depth of solvent penetration, a prerequisite to determining feasibility and cost of various remediation alternatives.

BROWNFIELDS REDEVELOPMENT

Through its site remediation work in New Jersey and Pennsylvania, and its involvement with EPA and the Northeast Midwest Institute, The Whitman Companies, Inc. is a national leader in Brownfields redevelopment. The company is working with the City of Trenton, New Jersey in shaping and implementing its highly aggressive Brownfields program. Dr. Whitman will be honored by the American Academy of Environmental Engineers as its 1996 Kappe Lecturer, and will present a series of lectures on Brownfields redevelopment at universities nationwide.

ENGINEERING DESIGN

With the acquisition in 1995 of Professional Engineering Associates, Inc., The Whitman Companies, Inc. expands its environmental capabilities to include detailed design of engineered environmental management systems. Facilities designed by senior Whitman engineering personnel under the direction of Harry H. Elias include:

- Wastewater collection and treatment facilities
- Ground water treatment systems
- Air pollution control systems
- Underground storage tank and fuel dispensing facilities
- Repair, replacement and modernization of boiler systems

The design process for new or upgraded facilities includes detailed surveys and evaluation of existing operations and conditions, conceptual designs, preparation engineering drawings, specifications, process descriptions and equipment lists, oversight of the bidding process, and supervision of construction and installation. Where desired by the client, Whitman can design and install engineered systems on a total turnkey basis.

ENVIRONMENTAL MANAGEMENT

The Whitman Companies, Inc. offers complete in-plant environmental management services.

Air Pollution	Title 5 Permitting, Compliance Audits & Evaluation of Control Technologies
OSHA/Right To Know	Labeling Design, Policies & Procedures, Auditing
Pollution Prevention	Source Reduction & Pollution Prevention Plans
RCRA	Waste Audits, Waste Management Training, Disposal Site Auditing
Risk Management	TCPA, Hazard Analysis, Risk Assessment
SARA	Form R Annual Inventory
Solid Waste	Landfill Disruption and Closure
Spill Control	DPCC & SPCC Plans, Emergency Response Training
Storm Water	Permitting, Compliance, Discharge Prevention
Water Pollution	Permitting, Monitoring, Pollution Control Design

GROUND WATER CONTAMINATION ASSESSMENT AND REMEDIATION

The Whitman Companies, Inc. is a regional leader in performing innovative ground water assessments and in developing unconventional, ground water containment and remediation methods. The Whitman Companies utilizes specialized equipment for well logging and in-well testing, so that the company has a unique capability as a leader in hydrogeologic characterization of bedrock formations, innovative testing and remediation of contaminated ground water in complex settings.

Our approach to ground water contamination problems is to offer cost-effective, practical solutions that best meet the client's needs and regulatory requirements. The more than 100 Whitman ground water projects were located throughout all hydrogeologic regions of the East Coast, in New Jersey, Delaware, Pennsylvania, New York and Virginia.

Innovative Testing

Ground water investigations include well installation and logging, sampling of wells, laboratory analyses, potentiometric mapping, aquifer testing, determination of ground water flow direction and rates, plume delineation modeling and impact assessment. For the majority of its projects, Whitman was able to convince regulatory agencies that natural remediation of contaminated ground water offered sufficient protection of human health and the environment. In these cases, we have assisted our clients in avoiding the need for active remediation facilities such as ground water pump and treat systems by the strength of the evidence provided by the testing phase of the project.

Newark Basin - Successful Cleanups

The Whitman Companies, Inc. has specialized expertise in the hydrogeology of the bedrock formations of the Newark Basin which extends through central and northern New Jersey to eastern Pennsylvania. Ground water assessment and remediation are difficult in these formations, particularly if contaminants involve chlorinated solvents. The Whitman Companies, Inc. has designed and implemented successful ground water cleanups at three heavily contaminated sites in fractured bedrock. Our hydrogeologists are widely published; their writings pertain to conceptual aquifer models, contaminant assessments and ground water remediation issues in the Newark Basin region.

Plume Dating

It is often necessary to determine the time at which ground water discharges occurred and to pinpoint the location and source of a contaminant plume. Plume dating is a technique that uses chemical clues combined with hydrogeologic testing to determine the time of origin of a plume of ground water contamination. The technique is particularly valuable in insurance cases where different insurance polices may have been in effect over different periods of time, and in litigation against predecessor operators of gasoline service stations to determine who was responsible for subsurface discharges. The Whitman Companies' expertise in plume dating has been of great value to clients and attorneys involved in complex insurance and predecessor liability cases.

INNOVATIVE HYDROGEOLOGIC APPROACHES

The Whitman Companies, Inc. is a leader in assessing subsurface (soil and ground water) contamination at complex industrial sites. We have designed and implemented site remediation programs that are innovative, cost effective, and practical. The following case histories illustrate this approach. Each site has a complex multi-owner and multi-user industrial history. Each site had severe soil and ground water contamination. In each case, appropriate regulatory approvals were obtained for the innovative remediation proposed by Whitman to avoid a long and costly program of conventional ground water remediation.

DNAPL Removal

Pools of spent chlorinated solvent were discovered on an industrial property where over two decades earlier the solvent had been discharged into the saturated subsurface zone, atop a thick clay layer. After proper delineation of pools of dense non-aqueous phase liquid (DNAPL), The Whitman Companies designed and patiently implemented a product recovery program that has yielded removal of over 90% of the trapped waste solvent.

Negotiations with state regulatory authorities resulted in their approval of the following remediation.

1. Residual product removal using innovative technologies (hydraulic mobilization and thermally enhanced soil vapor extraction for the saturated zone).

2. Encapsulation of residual product by subsurface slurry wall and impermeable cap.

3. Passive remediation of a plume of ground water contamination.

Chlorinated Solvents in Newark Basin Bedrock Formation

Cases involving chlorinated solvent (TCE, PCE) in fractured aquifers of Pennsylvania and New Jersey present the greatest challenge in ground water cleanups. Success depends on locating transmissive fractures and understanding flow patterns in bedrock. The Whitman Companies has developed an innovative and inexpensive methodology for identifying such fractures. This methodology was first used at an industrial site in central New Jersey several years ago.

The plume of dissolved contamination extended over 1,000 feet, yet only one recovery well was necessary to capture the plume and the source area. Owing to proper fracture flow characterization and recovery well placement, the cost of pump and treat remediation was minimized.

The Whitman Companies' expertise in characterization and remediation of ground water contamination in bedrock aquifers is widely recognized. Publications documenting the company's approach have been frequently cited within the field of ground water remediation.

UNDERGROUND STORAGE TANKS

The Whitman Companies, Inc. provides complete management services to owners and operators of underground storage tank systems (USTs).

In accordance with The Storage Tank and Spill Prevention Act, 25 Pa. Code Chapter 245, The Whitman Companies is experienced at performing turnkey UST management services including:

- Site Investigations (per Environmental Investigation Guidelines [Interim 4/94]).
- UST Removal Supervision.
- Soil Remediation (per Cleanup Standards for Contaminated Soils [12/93]).
- Ground Water Quality Assessment.
- Corrective Action Plan Design.
- Interface with the Pennsylvania Department of Environmental Resources (PADER).

In New Jersey, The Whitman Companies, Inc. provided comments and criticisms of NJDEP's proposed UST regulations in 1989. Upon promulgation of the New Jersey regulations, Dr. Ira L. Whitman lectured extensively to business and technical groups on the impact of the regulations to the regulated industry. Under the 1990 regulations, The Whitman Companies is fully certified for underground storage tank closure and site assessment. Whitman has successfully filed closure plans with NJDEP, supervised removal of regulated tanks, and conducted necessary site assessment activities including soil sampling and well installation. The company has prepared and submitted numerous Site Assessment Summaries and Remedial Investigation Reports for situations as simple as one small gasoline tank or as complex as multiple tanks of varied contents on sites of complex hydrogeology.

For municipalities, The Whitman Companies prepares engineering specifications and plans for contractor bids on UST closure. Whitman designs the installation of new fueling systems and prepares final as-built drawings. The company provides total contractor supervision.

Whitman is in the forefront of developing and implementing UST management programs for clients subject to the UST regulations. Tank management programs include not only the removal or closure of USTs, but the testing, maintenance and management of tank systems.

Whitman has retained on several cases to resolve disputes between owners and operators of gasoline service stations caused by leaking underground storage tanks. In one case we were hired by the attorneys for both sides of a dispute to arbitrate the issue of liability for UST related discharges to soil and ground water. In another case, we have been retained jointly by the owner and former operator of a service station to proceed with soil and ground water investigation and remediation on behalf of both liable parties.

EXPERT REPORTS AND TESTIMONY

Senior level specialists at The Whitman Companies, Inc. are called on by attorneys and clients to prepare expert opinions and to testify in matters of litigation relative to our areas of expertise in environmental engineering, ground water hydrogeology, site remediation and regulatory compliance. Our diverse expert assignments include:

1.	Predecessor Liability	Expert report to determine liability associated with predecessor owners on a major cleanup site involving ground water contamination and DNAPL removal.
2.	Insurance Liability	Testimony on the waste handling practices of a major corporation to determine the respective liability of responsibility several insurance carriers.
3.	Ground Water Discharges	Determination of the timing of discharges, responsibility and cleanup cost allocation associated with gasoline station ground water contamination.
4.	Regulatory Compliance	Expert report and testimony to evaluate whether procedures followed on a site investigation and cleanup meet applicable regulatory compliance requirements.
5.	NPL Consistency	Expert report documenting that removal and remediation actions taken at a state cleanup site are consistent with the NPL under CERCLA.
6.	Historical Source Identification	Site investigation, expert report and testimony to link subsurface contamination with a major industrial plant that occupied the site during the years 1890-1948.
7.	Landfill Siting	Expert report and testimony on the siting of a regional sanitary landfill and its consistency with state mandated criteria. Expert reports and testimony in several states regarding disposal sites for low level radioactive wastes.
8.	Ground Water Sources	Technical evaluation of several ground water sources to determine their relative contributions to contamination at a major remediation site.
9.	Off-Site Contamination	Documentation of sources of soil contamination on a client's site that originate from neighboring properties and from off-site drainage.
10.	Arbitration	Key witness in arbitration procedure to determine cleanup liability of various responsible parties at major former industrial site.

REFERENCES

The following references may be contacted with regard to the performance and experience of The Whitman Companies, Inc.

1. Lynn A. Clark, P.E., Director of Environmental Affairs
   Leaseway Transportation Corp
   Cleveland, Ohio
   (216) 765-5500

2. Edward Hoover
   High Associates, Ltd.
   Lancaster, Pennsylvania
   (717) 291-2284

3. David T. Houston, Jr.
   David T. Houston Company, Commercial Real Estate
   Bloomfield, New Jersey
   (201) 429-8000

4. Hans D. Karras, Vice President, Operations
   The Wella Corporation
   Richmond, Virginia
   (804) 236-0078

5. Dennis Krumholz, Esquire
   Riker Danzig, et al.
   Morristown, New Jersey
   (201) 538-0800

6. Stanley Marcus
   Marcus Associates, Real Estate Developers
   Hackensack, New Jersey
   (201) 342-3900

7. Steven J. Picco, Esquire
   Picco Mack Herbert
   Trenton, New Jersey
   (609) 393-2400

APPENDIX 2

THE WHITMAN COMPANIES, INC.
CURRICULUM VITAE

IRA L. WHITMAN, Ph.D., P.E.

PRESIDENT & PRINCIPAL CONSULTANT
THE WHITMAN COMPANIES, INC.

EDUCATION

Ph. D.	*Environmental Engineering Science, The Johns Hopkins University*	*1968*
M.S.	*Civil Engineering, The Polytechnic Institute of Brooklyn*	*1963*
B.C.E.	*Civil Engineering, The Cooper Union*	*1961*

REGISTRATION AND CERTIFICATION

Diplomate, American Academy of Environmental Engineers
Certified in the specialty of Hazardous Waste Management

Registered Professional Engineer, New Jersey, New York, Maryland, Ohio, Delaware, Pennsylvania

Certified to Conduct Underground Storage Tank Closure and Subsurface Investigations in New Jersey *UST No. E0000195*

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

In 1985, Dr. Whitman founded The Whitman Companies, Inc., consultants in Environmental Engineering and Management. The company is dedicated to serve its clients in the field of environmental compliance by bridging the gap between management and technical issues that often create compliance difficulties.

Dr. Whitman is an expert on site remediation and on compliance with ISRA, the New Jersey Industrial Site Recovery Act. The Whitman Companies has managed environmental compliance projects for industries in most fields of manufacturing, including chemicals, steel, electronics, ceramics, printing, rubber and machinery. He serves on the Site Remediation Advisory Committee, a group established to assist NJDEP in implementing its site remediation activities.

In 1985, Dr. Whitman prepared some of the earliest ECRA Cleanup Plans approved by NJDEP, for companies in the metal finishing and printing industries. He has supervised site remediation design and implementation projects involving a wide variety of contaminants, ground water conditions, and remediation technologies. The Whitman Companies, Inc. has recently initiated an innovative bioremediation project for both contaminated soil and ground water at a chemical manufacturing facility which will remain in operation during the course of the two year remediation.

Dr. Whitman has devoted considerable attention to the problems of redeveloping urban industrial sites, and the risks and economic benefits associated with site reuse. He has helped to guide a national effort on Brownfields through the Northeast Midwest Institute in Washington, D.C., as a member of the Institute's Board of Directors. He is presently involved in advising groups at USEPA, The New Jersey Institute of Technology, and several municipalities on Brownfields Issues.

Dr. Whitman has served in an expert capacity on numerous cases involving environmental compliance and site remediation. He has prepared expert reports and testimony involving ground water and soil contamination, site redevelopment, and a wide variety of regulatory, engineering and scientific matters.

Dr. Whitman's other recent professional assignments include the following:

- *Representing clients in matters of insurance claims pertaining to site remediation*
- *Review and comment on proposed environmental regulations and legislation*
- *Environmental audits of industrial operations*

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

Princeton Aqua Science
Edison, New Jersey **1980-1985**

President and C.E.O.

Responsible for all business, technical and marketing activities for Princeton Aqua Science, a firm of environmental scientists and engineers.

- *In 5 years led the firm to a five-fold increase in sales, and a ten-fold increase in profits.*
- *Developed regional preeminence in chemical and aquatic bioassay analysis, hazardous waste site investigation and environmental impact analysis.*
- *Directed staff of 80 including 8 Ph.D.s and 6 Registered Professional Engineers. Disciplines included geology, chemistry, biology, civil, chemical, mechanical and environmental engineering.*
- *Managed all marketing, sales and public relations.*
- *Responsible for developing and implementing annual business plans, budgets, capital acquisition and marketing programs for the company.*

Dr. Whitman guided PAS into becoming one of the primary ECRA and site remediation authorities in the state, areas of environmental engineering that were responsible for much of the company's growth. Because of PAS' established reputation as an ECRA consultant, the firm was acquired in 1985 by a major national environmental engineering and remediation consulting firm.

NUS Corporation
Gaithersburg, Maryland **1976-1980**

Director, Public Works Programs

Responsible for developing and executing projects in environmental engineering and energy for federal, state and local agencies. Served as advisor to corporate management on the development of programs in hazardous waste management. Public sector business development included projects related to:

- *Advanced wastewater treatment*
- *Energy development, conservation, and integrated uses.*
- *Solid waste, resource and fuel recovery.*
- *Water resources management.*

Ira L. Whitman, P.E.
Environmental Engineering and Management
Columbus, Ohio **1975-1976**

Principal

Sole proprietor in environmental consulting during 18 month period. Private and public sector clients including American Public Works Association (APWA) and National Academy of Science. For APWA, developed a 40 hour EPA training program on "Troubleshooting Operations at Wastewater Treatment Plants." Course was presented in all 10 EPA regions.

State of Ohio EPA
Columbus, Ohio **1972-1975**

Director, and Member of Governor's Cabinet

Served as organizer and first Director of the Ohio EPA. Management, regulatory and technical responsibility for all State programs in water and air pollution control, solid waste, drinking water, environmental impact and comprehensive water planning. As Ohio EPA Director, served on the boards of the following authorities:

- *Ohio Power Siting Commission, Chairman*
- *ORSANCO*
- *Great Lakes Basin Commission*
- *Ohio Air and Water Development Authorities*
- *IJC Great Lakes Water Quality Board*
- *Trustee, Association of State and Interstate Water Pollution Control Agencies*

Battelle Memorial Institute
Columbus, Ohio **1968-1972**

Director, Urban and Environmental Planning Programs

Organized and managed programs in environmental planning, EIS analysis, water resources and regional development. Developed the first quantitative environmental evaluation system under NEPA for the U.S. Bureau of Reclamation, U.S.D.I. Prior to Battelle, employment included flood plain management and hydraulic engineering for the Baltimore and New York Districts, U.S. Army Corps of Engineers.

PRESENTATIONS AND SPEAKING ENGAGEMENTS

Dr. Whitman is an active speaker on many subject areas in the environmental field. Recent speaking assignments have included:

1. *April 1995* — *Innovation in Site Investigation for Ground Water, Technology Council of Greater Philadelphia*
2. *March 1995* — *Guidance for the Remediation of Contaminated Soil, New Jersey Environmental Regulation Update, Woodbridge, New Jersey*
3. *January 1995* — *Identifying and Prioritizing Contamination Problems at Brownfields Sites, USEPA Brownfields Workshops, Newark, NJ, Buffalo, NY and San Juan, PR*
4. *June 1994* — *Impacts of Clean Water Act Legislation on Industry, Hazmat International Conference, Philadelphia, Pennsylvania*
5. *April 1994* — *Standards and Economic Issues For Soil Remediation, Conference on Environmental Regulation in New Jersey, Woodbridge, New Jersey*
6. *March 1994* — *S-1070 ISRA and Spill Act Amendments-Technical Aspects, New Jersey Pollution Law and Regulation Conference, Woodbridge, New Jersey*

7. *October 1993* — *Case Study - DNAPL Ground Water Remediation, New Jersey Environmental Exposition, Somerset, New Jersey*

8. *October 1993* — *Implications of Environmental Issues, 38th Annual Senior Management Conference, New Jersey Council of Savings Institutions, Absecon, New Jersey*

9. *October 1993* — *ISRA - Technical Changes To ECRA, New Jersey State League of Municipalities, Woodbridge, New Jersey*

10. *July 1993* — *Remediation Standards, Engineering and Institutional Controls, NAIOP, The Association of Commercial Real Estate, Woodbridge, New Jersey*

11. *October 1992* — *Perspectives on Environmental Development and Protection, Symposium on Brownfields Redevelopment Strategies, Cleveland, Ohio*

12. *June 1992* — *Water Environment Federation and Reauthorization of The Clean Water Act, Pennsylvania Water Pollution Control Association, Pittsburgh, Pennsylvania*

13. *March 1992* — *Environmental Issues For Municipalities, Institute of Municipal Attorneys, Cranford, New Jersey*

14. *July 1991* — *Keynote Address, Environmental Assessments For Urban Industrial Sites, Environmental Site Assessment Conference, NWWA, Columbus, Ohio*

15. *June 1991* — *Linking Environmental, Development and Preservation Perspectives, Workplaces Conference, Northeast Midwest Institute, Chicago, Illinois*

PROFESSIONAL ASSOCIATIONS AND ACTIVITIES

American Academy of Environmental Engineers
American Society of Civil Engineers
Water Environment Federation
Association of Groundwater Scientists and Engineers
Hazardous Waste Committee, NJ Water Environment Association
Air and Waste Management Association
American Society For Testing and Materials
US TAG to ISO/TC 207 on Environmental Management

Dr. Whitman serves as Chairman of The Clean Water Act Reauthorization Committee for the Water Environment Federation, Alexandria, Virginia. He has been a Director at Large on the Board of Control of the Federation and a member of the Executive Committee.

Dr. Whitman is on the Board of Directors of the Northeast-Midwest Institute, a non-profit research and policy organization serving the 18 state Northeast and Midwest Regions. He is a member of the Training and Technology Transfer Advisory Committee of the Northeast Hazardous Substance Research Center, New Jersey Institute of Technology.

In 1992, Dr. Whitman received the NJWPCA award for Professional Advancement of Hazardous Waste Management.

Dr. Whitman organized and directed a three day course entitled Environmental Compliance Audits and Site Assessments, given in 1989 for The Center For Professional Advancement.

Dr. Whitman has served on professional panels and advisory groups throughout his career, including: Board of Trustees, New Jersey Marine Sciences Consortium; Planning Group to Develop a Ground Water Monitoring Strategy for USEPA; Advisory groups to New Jersey Department of Environmental Protection, National Academy of Sciences, USEPA.

PUBLICATIONS

Dr. Whitman has authored numerous professional publications in the field of Environmental Management. Recent publications include:

"Field Study of Enhanced Recovery of DNAPL Pooled Below the Water Table," Ground Water Monitoring and Remediation, Winter 1995 Issue. Co-authors Andrew Michalski, Michael Metlitz

"Companies Advised To Prepare For New Air Pollution Permits," New Jersey Lawyer, January 2, 1995, Co-author Barry Skoultchi

"New Jersey's ISRA Law Sets Tone For Industrial Cleanups in '90s," Industrial Wastewater, May/June 1994. Co-Author Richard Britton

"Environmental Due Diligence," Building Operating Management, August 1993. Co-author Susan H. Eisenberg

"Taking Care of Ground Water Contamination," New Jersey Lawyer, February 8, 1993 Co-author Andrew Michalski, Ph.D.

"Use Due Diligence in Selecting an Environmental Consultant." Tri-State Real Estate Journal, January 1992.

ECRA, New Jersey's Revolutionary Approach To Hazardous Industrial Site Contamination, New Jersey Water Pollution Control Association, 1986.

MICHAEL N. METLITZ

PROJECT MANAGER

EDUCATION

M.S.	*Environmental Engineering,* *New Jersey Institute of Technology*	*1991*
B.S.	*Chemical Engineering,* *Rutgers University, College of Engineering*	*1984*

REGISTRATION AND CERTIFICATION

Registered Engineer In Training, New Jersey

Certified to conduct Underground Storage Tank Closure and Subsurface Investigations *UST No. 0001966*

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

Mr. Metlitz joined The Whitman Companies, Inc. in March 1988. As Project Manager, Mr. Metlitz's responsibilities include managing ISRA related sampling and cleanup activities and performing environmental audits at industrial facilities.

Mr. Metlitz's other recent professional assignments include the following:

- *Completing Right-To-Know Survey Forms for Industrial Facilities*
- *Completing US EPA Toxic Chemical Release Inventory Reporting Forms (Form R)*
- *Completing NJDEP Air Pollution Permit Applications for Manufacturing Operations*
- *Completing Annual Hazardous Waste Reporting Forms for Industrial Facilities*
- *Managing Underground Storage Tanks Removal Programs*
- *Providing Expert Testimony*

Mr. Metlitz is currently overseeing the cleanup of one of the largest discharges of free chlorinated solvents in New Jersey. Activities include construction of a slurry wall and pilot studies of alternative remedial methods.

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

New Jersey Department of Environmental Protection
Bureau of Environmental Evaluation and Cleanup
Responsibility Assessment
Trenton, New Jersey **1985-1988**

Assistant Environmental Engineer

Case Manager on over 40 ECRA projects, several of which were multi-million dollar cleanup liability situations. Responsibilities included reviewing ECRA Sampling and Cleanup Plans, completing site investigations of subject facilities, coordinating technical comments from state support staff on technical documents, communicating with applicants' attorneys and consultants and attending public meetings.

Hatco Chemical
Fords, New Jersey **1984-1985**

Pilot Plant Engineer

Responsibilities included performing scale up studies of the production of specialty chemicals and small batch production of synthetic lubricants.

PROFESSIONAL ASSOCIATIONS AND ACTIVITIES

Chairman, New Jersey Section of American Institute of Chemical Engineers (AIChE), 1992
Governmental Interaction Committee, AIChE
Co-Chairman, AIChE 1989, Fall Lecture Series
Chairman, AIChE 1990 and 1992 Spring Symposium
Co-Chairman, AIChE 1991 Spring Symposium
NJDEP Technical Advisory Committee, 1992 to Present

PUBLICATIONS

Encyclopedia of Environmental Control Technology, Volume 6, Pollution Reduction and Contaminant Control, "Remedial Investigation of a Discharge of a Dense Nonaqueous Phase Liquid," pp. 219-257, Gulf Publishing Company, Houston.

AICHE 1994 Summer National Meeting, Paper Number 9A, "Experimental Recovery of Waste Chlorinated Solvent Pooled Below the Water Table," August 17, 1994.

KARL N. WERNER, P.E.

SENIOR ENGINEER
THE WHITMAN COMPANIES, INC.

EDUCATION

M.B.A.	*Suffolk University*	*1987*
M.S.	*Chemical Engineering, Northeastern University*	*1970*
B.S.	*Chemical Engineering, Northeastern University*	*1968*

PROFESSIONAL CERTIFICATION

Registered Professional Engineer in New Jersey, No. 38393
Registered Professional Engineer in Massachusetts, No. 28578

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

As senior environmental engineer, Mr. Werner is responsible for providing technical leadership in the areas of soil and ground water remediation, innovative technology, feasibility analysis, and engineering design, construction, and operation. Mr. Werner is a registered professional engineer with over 20 years of professional experience in the execution and management of comprehensive environmental and industrial projects.

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

Metcalf & Eddy, Inc.
Somerville, New Jersey **1992-1993**

Project Director

Responsible for technical and management direction of diverse projects for government and industrial clients. Other responsibilities consisted of evaluating promising technologies and managing the activities of project managers and technical staff. Mr. Werner's projects included:

- *Start up and operation of a ground water pump and treatment plant to treat contaminated ground water at Picatinny Army Arsenal.*
- *Bench treatability and pilot plant development plans to treat stormwater at Newark Airport.*
- *Development and implementation of plans for installation and operation of a ultraviolet peroxidation system to reduce Volatile Organic Compound's in process wastewater discharging to a municipal waste water facility for a confidential pharmaceutical client.*

- *For Exxon's Bayway Refinery, successfully challenged NJDEP's assertion that cooling towers are Best Demonstrated Available Technology to reduce thermal discharges to Morses Creek.*

- *Performed testing to evaluate the performance of soil and groundwater pump and treat and soil vapor extraction systems to remediate solvent contaminated soil and ground water for Nestle in Freehold, New Jersey.*

- *Prepared ECRA remedial action work plans for client sites proceeding to remediation.*

- *At a PCB contaminated natural gas site, alternative bioremediation plans were developed and presented to NJDEP, who agreed to review the results of treatability testing and conditionally approve an on-site pilot demonstration provided the treatability showed significant reduction in Arochor 1248. The treatability tests showed a greater than 90 percent PCB reduction.*

- *Managed preparation of a CERCLA feasibility study recommending soil washing and bioremediation of dioxin's, PCB's, insecticides and herbicides.*

OHM Corporation
Princeton, New Jersey **1990-1992**

Technical Manager
Technology Applications and Commercialization Group

Responsible for providing technical and project management support to the regional offices of OHM Corporation. Other responsibilities involved managing treatability projects and providing technical support to the national account directors. Mr. Werner's projects included:

- *Technical director at the AVTEX Superfund site responsible for designing and evaluating treatability study data, developing and installing an innovative waste treatment system, cost analysis of treatment system options, managing construction and operation of a pilot plant, disposal plans, staffing, and approval of prepared work plans and technical reports.*

- *At the US Army Corps Rhinehart Tire Fire site, Mr. Werner was responsible for upgrading an inoperable treatment system that required redesign, financial duties, procurement, instruments and controls, installation, start-up, and validation of the water treatment system.*

- *At the Syncon Resins, New Jersey Superfund site, reviewed and provided technical direction for the construction and qualification of the state-of-the-art ground water treatment plant.*

- *Worked with a nuclear fuels client to develop and implement a treatment scheme for disposal of mixed waste sludge.*

- *Provided technical support to USEPA ERCS contracts preparing work plans and providing on-site project management.*

- *Worked with a confidential client to assess a low level RAD waste and prepared approaches to decontaminate waste material on site.*

- *For an electronics firm, Mr. Werner developed and implemented a system with client to dewater metallic sludge allowing the waste to be landfilled.*

- *Provided technical support preparing SOP's and plans for USATHAMA and Corps of Engineer Superfund projects.*

Moleculon, Inc.
Cambridge, Massachusetts **1987-1989**

Project Director

Responsible for developing technology and targeting markets for technology applications. Other responsibilities entailed hiring and managing a group and establishing support requirements. Mr. Werner's projects included:

- *Development of a proprietary zero discharge spray drying process.*

- *Established pilot and analytical laboratories and constructed a pilot plant.*

- *Evaluated solvent options to spray drying with methylene chloride.*

Gillette Company
Boston, Massachusetts **1976-1987**

Project Manager

Responsible for environmental compliance, capital projects and providing support to divisions within the company. Mr. Werner's projects included:

- *Replacement and spill prevention for plant tank farms.*

- *Providing Right-To-Know presentations to plant personnel.*

- *Preparation of air permits.*

- *Managed installation of resource recovery systems.*

- *Designed and installed chemical production systems to maximize recycle and minimize waste.*

- *Developed and instituted reclaim/recycle procedures for division wide use.*

Arthur D. Little, Inc.
Cambridge, Massachusetts **1971-1976**

Environmental Consultant

Responsible for being a case manager and a staff resource to case managers on projects relating to environmental compliance, regulatory issues, air and water. Mr. Werner's projects included:

- *Management of contracts with IBM to address NYSDEC issues that led to rapid resolution and compliance at all manufacturing sites in New York.*
- *Management of a six month USEPA contract to characterize municipal incinerator air emissions.*
- *Resource on the preparation of an environmental impact statement that addressed super tankers sinking in the Gulf of Mexico.*
- *Development of ASTM and EPA test methods.*
- *Audited industry SICS on an EPA contract to establish a range of wastewater effluent treatment being performed by the industry.*
- *Performed assessments for odor, air and water problems for firms such as General Motors, General Electric, Pratt & Whitney, General Foods, Boston Edison, etc.*

Oxychem (Hooker Chemical)
Niagara Falls, New York **1968-1971**

Assistant Plant Manager

Responsible for management and environmental projects at organic and inorganic process plants. Mr. Werner's projects included:

- *Preparation of material balances to quantify process losses and inefficiencies that were addressed by installation of new process controls and closed loop recycle systems for organic, specialty chemical and inorganic process plants.*
- *Design and installation of a recovery process for condensed chlorine blow gas.*
- *As a member of the Niagara Falls Emergency Planning Committee, developed emergency response plans for the Oxychem site complex.*

PROFESSIONAL ASSOCIATIONS AND ACTIVITIES

Society of American Military Engineers
American Institute of Chemical Engineers

TODD GERBER

PROJECT HYDROGEOLOGIST

EDUCATION

M.S.	*Environmental Science* *Rutgers University*	*1992*
B.S.	*Geology* *Rutgers University*	*1987*

REGISTRATION AND CERTIFICATION

Professional Geologist, Tennessee	*No. TN 1416*
Professional Geologist, Pennsylvania	*PG-00154-G*
Completed 40 hour OSHA training course	
Certified to conduct Underground Storage Tank Closure and Subsurface Investigations	*UST No. G0000837*
N-2 Industrial Wastewater Treatment System Operator	*No. N-1310*

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

Mr. Gerber joined The Whitman Companies, Inc. in June 1987. As Project Hydrogeologist, Mr. Gerber's responsibilities include project management, sampling and cleanup activities related to underground storage tanks (BUST), industrial site investigation and cleanup (ECRA and ISRA) and ground water remediation. In addition to managing his own project, Mr. Gerber provides hydrogeological services related to ground water investigation and cleanup on other Whitman projects.

Mr. Gerber is currently overseeing the ground water cleanup of a fractured bedrock aquifer in the Passaic Formation contaminated with very high concentrations of chlorinated solvents. Activities included the installation and testing of numerous wells and operation of a 10 million gallon/year pump and treatment system. The treated water is pumped to an upgradient 500,000 gallon lagoon, which overlies the source area. This lagoon increases recovery by displacing DNAPL droplets from the underlying bedrock fractures.

Mr. Gerber is also overseeing another ground water remediation project in the Newark Basin which involved a spill of 3,000 gallons of gasoline. Under Mr. Gerber's direction, this site is being remediated by a combined soil vapor extraction and pump-and treat system.

At another site in the Newark Basin, Mr. Gerber performed extensive in-well testing, including electrical conductivity and temperature logging, slug testing and a short term pumping test within many on-site wells. By demonstating that the primary contaminant pathway was present within a single aquifer unit, a more timely and cost-efficient ground water cleanup was performed.

Outside the Newark Basin, Mr. Gerber supervised the investigation and remediation of a facility in northern New Jersey that has a widespread floating oil product and over 3,000 cubic yards of contaminated soil.

Mr. Gerber's other professional assignments include the following:

- *Completing NJPDES Discharge to Ground Water Permits for industrial facilities*
- *Supervising well drilling and installation*
- *Performing hydrogeological investigations, such as pump tests and in-well testing*
- *Supervising and performing soil gas surveys*
- *Conducting environmental site assessments and audits*
- *Preparation of Remedial Investigation Reports*

RELEVANT COURSES

Geraghty and Miller, "Fundamentals of Ground Water Contamination"
Steven's Institute of Technology, "Transport and Fate of Contaminants in the Subsurface"
NJWA, "IBM PC Applications in Ground Water Pollution And Hydrology,"
The Dale Carnegie Course

PROFESSIONAL ORGANIZATIONS

Association of Ground Water Scientists and Engineers
Geological Association of New Jersey

PUBLICATIONS

Michalski, A. and T. Gerber. "Fracture Flow Velocities in the Passaic Formation in Light of Interwell Tracer Tests." Environmental Geology of the Raritan River Basin. 9th Annual Meeting of the Geology Association of New Jersey, Somerset, New Jersey. October 30-31, 1992.

RICHARD BRITTON

PROJECT HYDROGEOLOGIST

EDUCATION

M.S.	*Environmental Science* *Rutgers University*	*1992*
B.S.	*Geology and Chemistry* *Rutgers University*	*1982*

REGISTRATION AND CERTIFICATION

Professional Geologist, Tennessee	*No. TN 1410*
Certified to conduct Underground Storage Tank Closure and Subsurface Investigations	*UST No. 0009987*
N-2 Industrial Wastewater Treatment System Operator	*No. N-1314*
Completed 40 hour OSHA training course	

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

Mr. Britton joined The Whitman Companies, Inc. in June 1989, as Project Hydrogeologist. His responsibilities include project management, supervision of sampling and cleanup activities, and extensive client/NJDEP contact in projects related to ground water remediation under ECRA (ISRA), State Case Management, BUST and other NJDEP programs.

Mr. Britton has had project management responsibilities on the following projects associated with ground water investigation and remediation.

Mr. Britton designed and performed a multimillion dollar remedial investigation at a 37 acre industrial facility located within the Newark Basin. He was project manager for the ground water portion of the investigation which included analysis of the impact of on-site contamination on the nearby municipal well field which tapped the fractured bedrock aquifer. Soil issues involved closure of eight UST's and widespread, random PCB contamination. Because of the extensive nature of the PCB soil contamination innovative remedial measures were proposed and accepted by the NJDEP.

Mr. Britton designed and implemented a Ground Water Quality Study in order to determine if a NJPDES permitted wastewater discharge was impacting downgradient ground water above NJDEP's II-A Ground Water Quality Criteria. In order to make such a determination, the hydrogeologic characteristics of the various water bearing and confining units underlying the site were defined and an understanding of how the various water bearing zones influence and interact with one another was developed. This conceptual hydrogeological model, together with an assessment of background water quality and identified downgradient receptors provided a foundation upon which the impact of wastewater discharge was modeled, analyzed, and assessed.

Mr. Britton designed and implemented a hydrogeological investigation in support of a passive/natural ground water remediation program for a site involving ground water contaminated with chlorinated organics compounds. The source of ground water contamination is contaminated sediments and soil underlying an on-site pond used to discharge chlorinated solvents. The hydrogelogical investigation has involved providing site specific hydrogeological data and analysis which demonstrates the absence of current and future downgradient receptors and the inadequacy of the affected water bearing zone to serve as an useful, productive or practical source of ground water. An area-wide hydrogelogical cross-section has been prepared to illustrate the thinness and small lateral extent of the contaminated aquifer and the eventual discharge point of ground water leaving the site. Source removal of contaminated pond sediments and soil are proposed in support of the passive/natural ground water remediation approach.

Mr. Britton facilitated an expedited closure approval for a site involving the removal of 12 leaking UST's in a mixed commercial and residential community. Timely completion of the closure was critical for the seller of the property. Remediation activities involved extensive soil removal and installation of numerous wells, including bedrock wells. Specialized hydrogeological analysis were required to obtain closure of this case through negotiations with NJDEP.

Other professional assignments include the following:

- *Supervising preliminary assessments, site and remedial investigations*
- *Supervising well drilling and installation activities, including numerous wells in the Passaic (Brunswick) Formation*
- *Performing and interpreting hydraulic tests, such as pump tests, slug tests, and in-well testing in porous and fractured aquifers*
- *Performing and interpreting soil gas surveys*
- *Analysis of remedial alternatives for soil and ground water media including the use of analytical and numerical models*
- *Preparation of Site and Remedial Investigation Reports including Remedial Action Workplans*

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

New Jersey Department of Environmental Protection
Bureau of Environmental Measurements and Quality Assurance
Trenton, New Jersey **1986-1989**

Principal Environmental Specialist

Performed technical reviews of CERCLA, RCRA and ECRA site specific work plans. Directed and monitored contractors' sampling and well installation procedures. Made site-specific field decisions and recommended alternative sampling approaches. Coordinated collection of environmental samples to assess conditions at various hazardous waste sites.

Colgate-Palmolive Company
Research and Development Center
Piscataway, New Jersey **1983-1986**

Chemist

Developed new and cost effective methods to analyze raw materials and final products for the competitive consumer market.

PROFESSIONAL ORGANIZATIONS

Association of Ground Water Scientists and Engineers
Association of Engineering Geologists
Geological Association of New Jersey
Hazardous Waste Committee, NJ Water Environment Association

COURSES COMPLETED

Princeton Course "Ground Water Pollution and Hydrology"
NGWA's "Treatment Technology for Contaminated Ground Water"
Rutgers' "Hydrogeology of the Glacial Deposits of New Jersey"
GSA's "Methods of Characterizing Fluid Movement and Chemical Transport in Fractured Rock"

PUBLICATIONS AND SPEAKING ENGAGEMENTS

Britton, R., I. Whitman. "New Jersey's ISRA Law Sets Tone For Industrial Cleanups in '90s." Industrial Wastewater, May/June 1994.

Michalski, A., R. Britton and A.H. Uminski. "Integrated Use of Multiple Techniques for Contaminated Investigations in Fractured Aquifers: A Case from Newark Basin, New Jersey." Proceedings of NGWA Focus Easterns Conference, October 13-15, 1992. Boston, MA. Published by NGWA

Michalski, A., R. Britton and A.H. Uminski. "Bedrock Hydrogeology of the Manville Bridgewater Section of the Raritan River Valley." Environmental Geology of the Raritan River Basin. 9th Annual Meeting of the Geology Association of New Jersey, Somerset, New Jersey. October 30-31, 1992.

MICHAEL D. WARNER

ENVIRONMENTAL ENGINEER

EDUCATION

B.S. *BioEnvironmental Engineering* *1994*
Rutgers University

REGISTRATION AND CERTIFICATION

Engineer In Training *No. 11169*

Completed 40 hour OSHA course

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

Mr. Warner joined The Whitman Companies, Inc. in February, 1995 as an Environmental Engineer. His responsibilities include supervision of sampling and cleanup activities, preparation of Phase I Environmental Site Assessments, Site Investigation Reports, Site Health and Safety Plans and compliance with OSHA regulations on hazardous site operations.

Mr. Warner's sampling assignments have included soil and water sampling at a variety of site involving PCBs, chlorinated hydrocarbons, petroleum hydrocarbons, and other hazardous contaminants. His sampling activities have included site investigation related to soil and ground water sampling, disposal sampling involving contaminated wood block flooring, and post remediation sampling.

Mr. Warner is responsible at the Whitman Companies for coordinating health and safety programs and issues. He oversees the company's medical monitoring program for OSHA trained field personnel. He develops health and safety plans associated with site remediation. He recently developed a health and safety plan in conjunction with a Remedial Action Workplan for a site with ground water, soil and sediments contaminated with chromium and chlorinated organic solvents. Mr. Warner is experienced in on-site health and safety monitoring during sampling and remediation activity.

Mr. Warner has independently performed Phase I Environmental Assessments at commercial sites throughout New Jersey. These Phase I Assessments are based on detailed site inspections conducted by Mr. Warner, upon review of files from state and local agencies and upon a detailed review of historical property use including the review of local tax records, aerial photographs, Sanborn Maps and computerized data searches.

Mr. Warner is also involved in the design and permitting of waste water facilities at a transforation facility including oil and grease collection, and the transport of waste water effluent to a new discharge point into the facility's sanitary sewer.

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

Huntingdon Engineering & Environmental
Middlesex, New Jersey **1994-1995**

Environmental Engineer/Drillers Assistant

Performed monitoring well installation and abandonment, soil borings, rock core sampling and soil classifications in NJ, NY, VA, and PA including Superfund and ISRA sites, chemical plants, municipal landfills, commercial, private and public sectors. Responsible for office compliance with OSHA regulations on hazardous site operations, developed Site Health & Safety Plans and injury/incident reports, performed building, drill rig, and vehicle inspections.

PROFESSIONAL ORGANIZATIONS

Air and Waste Management Association

300043

RENÉE SCHNEIDER

ENVIRONMENTAL SCIENTIST

EDUCATION

M.S.	*Environmental and Occupational Health* *Graduate School of Public Health* *University of Pittsburgh*	*1995* *(in progress)*
B.A.	*Geology* *California University of Pennsylvania*	*1992*

REGISTRATION AND CERTIFICATION

Completed 40 hour OSHA training course
Radiation Safety Course

RESPONSIBILITY AND EXPERIENCE, THE WHITMAN COMPANIES, INC.

Ms. Schneider joined The Whitman Companies, Inc. in October 1994. As an Environmental Scientist, Ms. Schneider's responsibilities include project management, sampling and cleanup activities related to underground storage tanks (BUST), industrial site investigation and cleanup (ECRA and ISRA) and ground water remediation. Ms. Schneider provides hydrogeological services related to ground water investigation and cleanup on other Whitman projects.

Ms. Schneider conducts environmental risk assessments associated with The Whitman Companies' site investigation and remedial action development projects.

Her activities have included the preparation of Phase I Environmental Assessment reports on a variety of facilities including multi-use buildings, commercial, residential and undeveloped properties. She is preparing a wetlands permit for NJDEP approval in association with the remediation of a leaking underground storage tank. Other projects that Ms. Schneider is presently participating in include the field investigation of a large soil remediation project involving PCB contamination and an innovative engineering control to reduce the level of risk, and site measurements associated with an ongoing ground water investigation.

Ms. Schneider's other professional assignments include the following:

- *Completing NJPDES Discharge to Ground Water Permits for industrial facilities*
- *Supervising well drilling and installation*
- *Performing hydrogeological investigations, such as pump tests and in-well testing*
- *Preparing Remedial Investigation Reports at sites where discharges have occurred from leaking underground storage tanks.*

SUMMARY OF OTHER PROFESSIONAL EXPERIENCE

Earth Sciences Consultants, Inc.
Export, Pennsylvania **1992-1993**

Geologist II

Aided in design of hydrogeologic work and site assessment plans. Directed and monitored contractors' sampling and well installation procedures. Coordinated quarterly sampling activities at industrial facilities and subsequent reporting requirements to PADER.

Implemented subsurface assessments at two large low-level radiation sites under the guidelines of the NRC. Coordinated and supervised two geologists and drilling and sampling activities over a 7-8 week period. Exercised ability to make site-specific field decisions.

Other responsibilities included coordination of quarterly sampling and reporting requirements for a large steel plant in Philadelphia, PA and subsurface assessments and ground water monitoring programs for a series of retail stations for BP Oil in western Ohio.

Anderson Geological Services
Washington, Pennsylvania **1991-1992**

Geologist

Implemented soil and hydrogeologic assessment work plans at municipal waste landfills as well as commercial and industrial sites. Prepared landfill/mine permits for submission to Pennsylvania Department Environmental Resources (PADER).

Implemented subsurface assessment at a site under consideration for development of a residual waste landfill in northern PA. Aided in compilation of reports to PADER.